SUSTAINABLE ENERGY PRACTICES: A STUDY ON SOLAR ENERGY USAGE IN SELECTED DAKSHINA KANNADA TALUKS

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Introduction / Background:

In recent years, renewable energy has emerged as a major priority for global sustainable development. Among these, solar energy stands out for its widespread availability and potential to dramatically reduce carbon emissions. Dakshina Kannada, a district in the Indian state of Karnataka, offers a unique chance to research solar energy adoption due to its diversified topography, meteorological conditions, and mixed urban-rural population. Despite the good conditions for solar energy generation, the level of its use in both residential and commercial settings in the region is varied and largely unknown.

Previous studies have emphasized the potential of solar energy in Karnataka, and the state government has implemented a variety of regulations to encourage its use. However, the success of these initiatives at the grassroots level, particularly in specific Taluks of Dakshina Kannada, warrants further examination. Early study suggests that, while urban locations may have a higher rate of solar adoption due to superior infrastructure and economic capacity, rural areas face substantial challenges such as a lack of awareness, high initial prices, and insufficient support networks.

This study seeks to fill a knowledge gap by doing a thorough investigation of solar energy usage in selected Taluks of Dakshina Kannada. The study will look into the present level of solar energy adoption, the various types of solar applications in use, and the major impediments to wider acceptance. Furthermore, the study will assess local opinions of government policies and support mechanisms, as well as residents and companies' readiness to invest in solar energy solutions.

Solar energy, which comes from the sun's radiation, is a renewable and sustainable source of energy. It can be utilized using a variety of technologies, including

photovoltaic (PV) cells and solar thermal systems. The use of solar energy has been acknowledged as a critical technique for reducing carbon emissions and mitigating climate change **(Lund, 2007).**

Studies show that different regions adopt solar energy at different rates. The adoption rate in India is affected by a number of variables, including awareness levels, economic status, and geographic location **(Bhattacharyya & Palit, 2016).**

Solar energy adoption in residential homes is influenced by household income, property ownership, and solar technology awareness, with initial installation costs and space requirements being significant factors **(Reddy & Painuly, 2004).**

This project aims to facilitate positive change in Dakshina Kannada's solar energy landscape by investigating people's willingness to invest in solar energy and obtaining information on potential initiatives that could spur greater adoption.

Objectives:

- To investigate the extent of solar energy adoption in residential and commercial settings, including the types of solar applications in use.
- To identify and analyze the key barriers hindering the widespread adoption of solar energy.
- To evaluate the perception of government support and policies related to solar energy in the selected Taluks.
- To explore the willingness of people to invest in solar energy.
- To gather insights on potential initiatives that could encourage greater adoption.

Methodology:

The study employs a mixed-methods approach, combining quantitative and qualitative research methods:

Survey Questionnaires: We have distributed structured questionnaires to a representative sample of residents in the selected Taluks to gather quantitative data on awareness, adoption, and attitudes towards solar energy.

Interviews: We are conducting in-depth interviews of solar energy users to gain qualitative insights into the challenges and opportunities in the solar energy landscape.

Data Analysis: We are using statistical tools for analyzing survey responses and qualitative data analysis techniques for extracting meaningful insights from questionnaire.

Hypothesis:

Null Hypothesis (H0): Government incentives and subsidies have no significant impact on the buying of solar energy systems in selected taluks of Dakshina Kannada.

Alternative Hypothesis (H1): Government incentives and subsidies have a significant impact on the buying of solar energy systems in selected taluks of Dakshina Kannada.

Results and Conclusions:

It is expected that the study on solar energy usage in the chosen taluks of Dakshina Kannada will produce insightful findings in a variety of solar energy adoption-related areas. Our thorough mixed-methods approach should allow us to arrive at the following conclusions:

Given the increased energy demands and potential cost savings in commercial settings, it is anticipated that the quantitative data from survey questionnaires will show a somewhat higher adoption rate of solar energy in residential settings. Photovoltaic (PV) panels for electricity generation and solar water heaters are probably the two most popular forms of solar applications.

We hope to uncover a number of obstacles to widespread adoption through survey results as well as in-depth interviews. These include expensive initial investment expenses, a lack of knowledge about the advantages of solar energy, and technical difficulties such insufficient sunshine or installation space. Bureaucratic roadblocks, challenges obtaining government subsidies, and a shortage of qualified professionals for installation and maintenance are possible additional obstacles. It is anticipated that the investigation would show that people's and business owners' willingness to engage in solar energy is cautious, pending the availability of more enticing financing options and more precise information regarding return on investment (ROI).

Conclusion:

Finally, the study seeks to offer a comprehensive picture of the state of solar energy use in the chosen taluks of Dakshina Kannada at this time. The goal of the research is to provide important insights that can influence policy and promote sustainable energy practices in the area by identifying important obstacles, attitudes, and prospective actions.

Description of the Innovation in the Project:

The study employs a mixed-methods approach to understand solar energy adoption in Dakshina Kannada Taluks. It uses quantitative surveys and qualitative interviews to provide a clear view of the situation, examining user barriers, personal experiences, and solar energy usage. The integration of statistical and qualitative data analysis provides a solid foundation for policy development.

Scope for Future Work:

The study's future scope will involve expanding the geographical area to include other Taluks and maybe other districts in order to acquire a more comprehensive

picture of solar energy adoption patterns. Further study can focus on longitudinal studies to track changes over time and the impact of emerging technology. Furthermore, comparative studies with different types of renewable energy can provide valuable information. Implementing pilot projects based on study suggestions and tracking their outcomes can help to validate the effectiveness of planned initiatives. It would also be useful to investigate the economic implications of widespread solar energy adoption, as well as its support to sustainable development goals.